

Equations

Equal

$$3x - 12 < 3$$

$$+12 \quad +12$$

$$3x < \frac{15}{3}$$

$$x < 5$$

Inequalities

not equal

$$3 > 1$$

$$3 \geq 3$$

$$3 \geq 1$$

$$3 < 5$$

$$3 \leq 3$$

$$3 \leq 5$$

$$7(4-2x) > 14$$

$$\begin{array}{r} 28 - 14x > 14 \\ -28 \end{array}$$

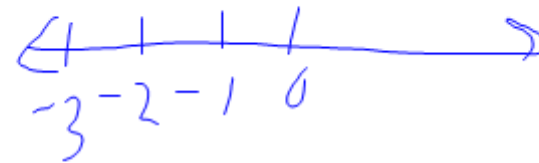
$$\begin{array}{r} -14x > -14 \\ \hline -14 \end{array} \quad \begin{array}{r} -14 \\ -14 \end{array}$$

$$x < 1$$



$$\frac{3}{-1} > \frac{1}{-1}$$

$$-3 < -1$$



$$\textcircled{a} \quad 3x + 1 \leq 19$$

-1 -1

$$\frac{3x}{3} \leq \frac{18}{3}$$

$$x \leq 6$$



$$\textcircled{b} \quad 6 + 5(2 - x) < 41$$

$$\underline{6 + 10} - 5x < 41$$

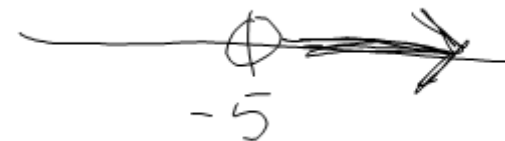
$$\underline{16} - 5x < 41$$

-16 -16

$$\underline{-5x} < \underline{25}$$

-5 -5

$$x > -5$$



$$\textcircled{1} \quad 6x - 13 < 6(x - 2)$$

$$\begin{array}{rcl} 6x - 13 & < & 6x - 12 \\ +13 & & +13 \end{array}$$

$$\begin{array}{rcl} 6x & < & 6x + 1 \\ -6x & & -6x \end{array}$$

$$0 < 1$$

True

All real numbers

$$5 > 10$$

No

No solution

d) $\frac{2x}{2} > \frac{-10}{2}$ and $\frac{9x}{9} < \frac{18}{9}$ compound inequality

$x > -5$ $x < 2$



$$c) 7x + 6 < 7(x - 4)$$

$$7x + 6 < 7x - 28$$

-6 -6

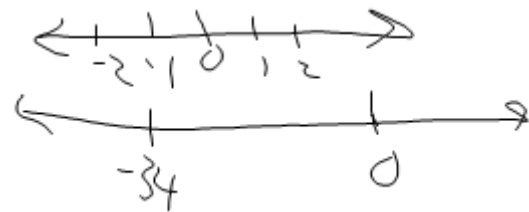
$$7x < 7x - 34$$

-7x -7x

$$0 < -34$$

False

No solution



$$d) 2x > x + 6 \quad \underline{\text{and}} \quad x - 7 < 2$$

-x -x +7 +7

$$x > 6$$

$$x < 9$$



Absolute Value

→ Distance from a number to zero



$$\rightarrow |5| = 5 \quad |-5| = 5 \quad -|5| = -5$$

→ No negative solutions* to absolute value part

→ Can be positives + negatives inside

$$|x| = -5$$

No
Solution

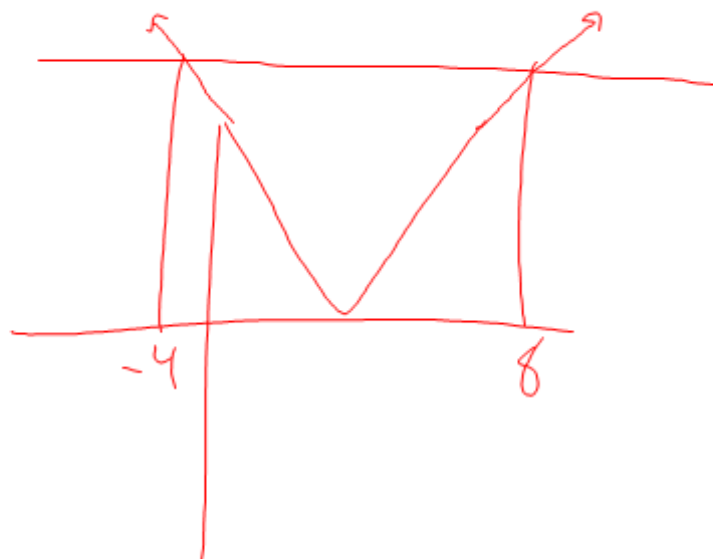
$$|x| = 5$$

$$x = 5, -5$$

$$\textcircled{e} \quad |2x - 4| = 12$$

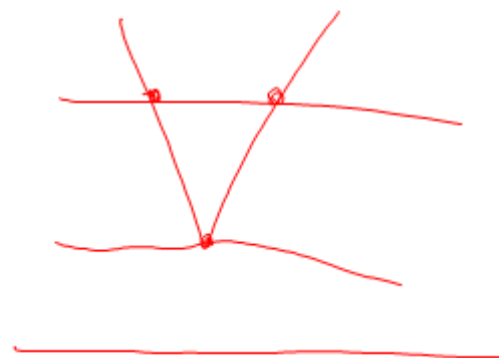
$$2x - 4 = 12 \quad \text{or} \quad 2x - 4 = -12$$

$$\begin{aligned} 2x &= 16 \\ x &= 8 \end{aligned}$$



$$2x - 4 = -12$$

$$\begin{aligned} 2x &= -8 \\ x &= -4 \end{aligned}$$



$$\textcircled{f} \quad \frac{3}{3} |x| = \frac{12}{3}$$

$$|x| = 4$$

$$\boxed{x = 4 \quad x = -4}$$

$$\textcircled{g} \quad \frac{3}{3} |4x-1| - 5 = 10$$

$$+5 \quad +5$$

$$\frac{3}{3} |4x-1| = \frac{15}{3}$$

$$|4x-1| = 5$$

$$4x-1 = 5 \quad 4x-1 = -5$$

$$+1 \quad +1$$

$$4x = 6 \quad 4x = -4$$

$$\boxed{x = \frac{3}{2} \quad x = -1}$$

$$\textcircled{h} \quad \frac{5}{1} |2x+3| = \frac{5}{-1} 3x+2$$

$$2x+3 = 3x+2$$

$$-2 \quad -2$$

$$2x+1 = 3x$$

$$-2x \quad -2x$$

$$\boxed{1 = x}$$

$$2x+3 = -3x-2$$

$$+2 \quad +2$$

$$2x+5 = -3x$$

$$-2x \quad -2x$$

$$5 = -5x$$

$$\boxed{-1 = x}$$

extraneous
solution

3 - A 100 %

2 - B $\frac{3}{4}$

1 - C $\frac{1}{2}$

0 - D less
than
 $\frac{1}{2}$

Sum
(add)

consecutive
(in order)

$$(a) \quad (x) + (x+1) + (x+2) = 90$$

$$\underline{x} + \underline{x+1} + \underline{x+2}$$

$$\begin{array}{r} 3x + 3 = 90 \\ -3 \quad -3 \end{array}$$

$$3x = 87$$

$$x = 29, 30, 31$$

$$A = \frac{\frac{1}{2} \cdot b \cdot h}{\frac{1}{2} b}$$

solve for h

$$\frac{A}{\frac{1}{2} b} = h$$

Sect. 1, 4

#1-10 (odd), 18, 19, 41, 42

Sect. 1, 5

#1-5, 35